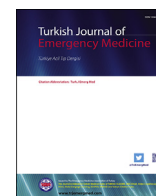


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Case report

Ruptured superior gluteal artery pseudoaneurysm with hemorrhagic shock: Case report

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ABSTRACT

Pseudoaneurysm of the superior gluteal artery (SGA) is very rare and the most common causes are blunt or penetrating pelvic traumas. Although pseudoaneurysm can be asymptomatic at the time of initial trauma, it can be symptomatic weeks, months, even years after initial trauma. We present a case of a ruptured superior gluteal artery pseudoaneurysm with hemorrhagic shock twenty days after a bomb injury in the Syria civil war. In addition, we review the anatomy of the SGA, clinical presentation and pitfalls of pseudoaneurysm, and imaging and treatment options.

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1. Introduction

Pseudoaneurysm of the superior gluteal artery (SGA) is rare, with only 40 cases reported since 1970. Blunt or penetrating pelvic trauma are the most common causes of pseudoaneurysm, but some less commonly reported ones were iatrogenic causes, infection, and atherosclerosis. The most important aspect of pseudoaneurysm as regards emergency medicine is that pseudoaneurysm can be symptomatic weeks, months, even years after initial trauma. If ruptured, pseudoaneurysm can be fatal. In this paper, we report on a patient that presented with a rupture of pseudoaneurysm twenty days after initial trauma.

2. Case report

A 17-year old male patient was injured in his right buttock and left chest by a bomb that contained multiple fragments during the Syria civil war. The patient had been diagnosed with hemothorax in the left lung and was treated with a tube thoracostomy. He had two wounds in his right buttock: one lesion on

the back of the buttock with a size of 0.5×0.5 cm and a second lesion in the lateral area of the buttock with a size of 7×2 cm. There was no active hemorrhage from either wound. Patient was discharged from hospital after twenty days of observation, but he was brought to our emergency department with an active arterial hemorrhage from a 7×2 cm open wound in the lateral area of the buttock during the night of the same day he was originally discharged. At the time of admission, patient was unconscious and he was diagnosed as being in stage 3 hemorrhagic shock. His vital signs were indicative of shock: blood pressure was 60/30 mm Hg, oxygen saturation was 94% on room air, heart rate was 125 beats/min, respiratory rate was 20/min, and fever was hypothermic. Fluid resuscitation was started with 2 L of normal saline and the wound was compressed to stop bleeding. After saline infusion, his vital signs and level of consciousness improved. The patient's hemoglobin and hematocrit levels were at 8.1 g/dL and 25.2%, respectively (discharge levels had been 10.1 g/dL and 31%), so he was given 1 U of packed red blood cells. The wound was explored, but hemorrhage source could be found due to massive arterial bleeding. Cardiovascular surgery was called for a consultation and they decided to perform a contrast-enhanced computed tomography (CT). The scan revealed a pseudoaneurysm originating from the right superior gluteal artery $4.5 \times 2.5 \times 2$ cm in the gluteal area (Fig. 1). Patient was referred to another hospital, where digital

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Fig. 1. 17-year-old male with buttock injury by bomb. Contrast-enhanced CT and angiography of pelvis show pseudoaneurysm of right superior gluteal artery. **Black arrows:** Images of pseudoaneurysm. **White arrow:** The images of sharpnel.

subtraction angiography (DSA) and transcatheter embolization were performed and the pseudoaneurysm was occluded by placing eight coils (Fig. 2). After an observation period of one week without repetitive bleeding or other complications, the patient was discharged.

3. Discussion

The SGA is the largest posterior branch of the internal iliac artery. During its course within the pelvis, it generally lies between the lumbosacral trunk and first sacral ventral ramus or,

rarely, between the first and second sacral rami. After exiting the pelvis through the sciatic foramen, it passes just below the sacroiliac joint and divides into deep and superficial branches.

Pseudoaneurysms are rare and were reported less than 150 times in the literature.¹ They occur due to breaching and thinning of the arterial wall, after which these aneurysms are enclosed only by the adventitial layer. Although the major causes of breaching and thinning are blunt or penetrating pelvic traumas, some less commonly reported ones were iatrogenic causes, infection, and atherosclerosis.^{2–5}

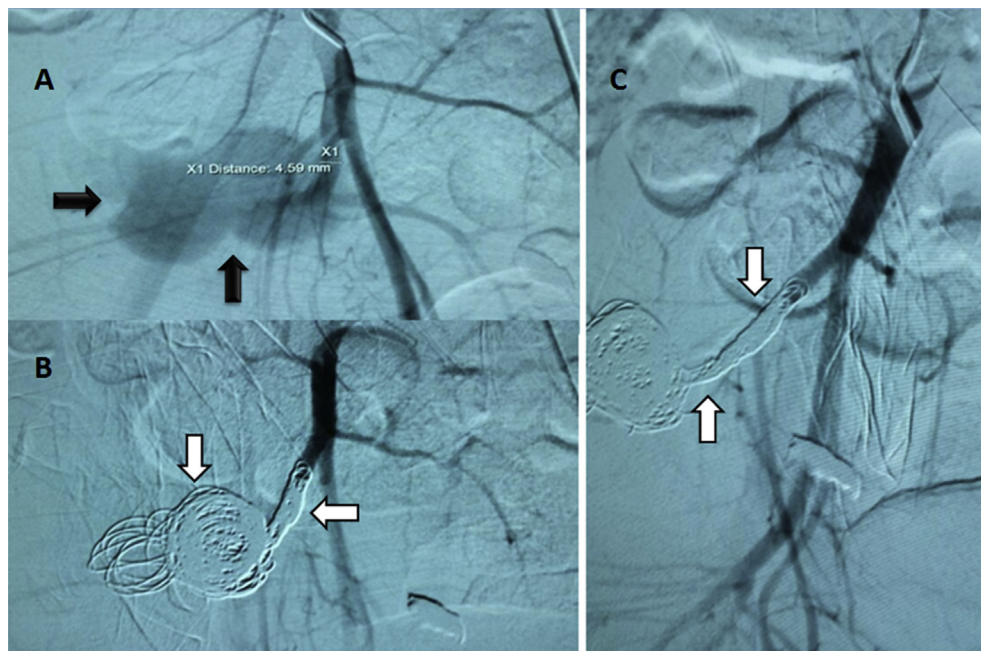


Fig. 2. 17-year-old male with buttock injury by bomb. **A:** DSA selective angiography of superior gluteal artery shows the pseudoaneurysm. **B and C:** After successful coil embolization the pseudoaneurysm has disappeared. **Black arrows:** Images of pseudoaneurysm on DSA. **White arrows:** Images of coils and disappeared pseudoaneurysm.

There are two pitfalls concerning the presentation of pseudoaneurysms of the SGA. First, because all symptoms are nonspecific, patients may be misdiagnosed with an abscess, sciatic pain or lumbosacral plexopathy.^{1,6} The nonspecific symptoms are localized swelling, pain, and pressure in the buttock.⁷ The diagnostic symptoms are that the mass is a pulsation or has systolic bruit, which helps to differentiate from other diagnoses such as abscess, lipoma, hygroma, and sarcoma. However, absence of pulsation or a bruit does not exclude pseudoaneurysm because when aneurysm is small, lined with a thrombus, or enclosed by an overlying hematoma, pulsation or bruit are absent.⁸ The second pitfall is the variable time of presentation. The symptoms may occur at any time after initial trauma, even weeks, months, or years later. Blin et al reported that a case of aneurysm of the SGA occurred more than ten years after pelvic trauma⁹; thus, physicians must be aware of old trauma in the history of patients with a buttock mass. In addition, like in our patient, a more dangerous type of clinical presentation is the rupture of a pseudoaneurysm. When ruptured, patients may present with hemorrhagic shock and cardiovascular collapse; thus, as physicians encounter patient with unexplained source of hemorrhagic shock, they should consider the possibility of a ruptured pseudoaneurysm as a source.

Due to its simplicity and non-invasiveness, color Doppler sonography can be used in the initial evaluation for differential diagnosis of pseudoaneurysm.^{10,11} Contrast-enhanced CT angiography can reveal the pseudoaneurysm, thus differentiating it from other diagnoses, as well as detect the location of the pseudoaneurysm.¹² Selective angiography of the internal iliac artery is the best choice for definitive diagnosis and provides an opportunity for endovascular treatment.

There are two procedures for treatment of pseudoaneurysm: open surgery and endovascular therapy. The surgical approach was first developed by Battle in 1898. The basic principle of this approach is proximal control coupled with endoaneurysmorrhaphy. In following years, various modifications have been developed, but the basic principles remain the same.^{8,13} Endovascular therapy with coil embolization has been used during the last two decades as an alternative to a surgical approach and

has become the first line treatment in non-complicated pseudoaneurysms.^{1,2}

4. Conclusion

Pseudoaneurysm of the SGA is rarely encountered and usually misdiagnosed in clinical practice. In addition, patients typically have non-specific symptoms and may be presented years after the initial trauma. Since pseudoaneurysms can be fatal when they rupture, physicians must be aware of them.

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